



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,427	05/25/2005	Masafumi Kokura	829-629	2403
23117 7590 12/13/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER ROSE, KIESHA L	
			ART UNIT 2822	PAPER NUMBER
			MAIL DATE 12/13/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/511,427

Applicant(s)

KOKURA ET AL.

Examiner

Kiesha L. Rose

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-12 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

This Office Action is in response to the request for reconsideration filed 9/26/07.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,4-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Figs. 14-16) in view of Lee (U.S. Publication 20040090564)

In re claim 1, Applicant's Prior Art discloses a liquid crystal display that contains a substrate (139) comprising a first electrode (126), a second electrode (130) being formed on an insulation film (152) so as to cover at least a part of first electrode and electrically connected with first electrode through a contact hole (150) formed on the insulation film, wherein first electrode includes a laminated structure of a metal film (126) and a protective film (Page 12, lines 6-7), an etching rate of metal film is almost equal to an etching rate of protective film with respect to a first etching for forming metal film an protective film and an etching rate of protective film is almost zero with respect to a second etching for forming contact hole, wherein the protective film is an amorphous conductive oxide (ITO). (Page 12, lines 6-7) Applicant's Prior Art discloses

Art Unit: 2822

all the limitations except for the protective film to contain indium oxide and zinc oxide.

Whereas Lee discloses a crystal display device that contains a conductive oxide made of ITO (indium tin oxide) that could also be made of IZO (indium zinc oxide). The ITO and IZO are interchangeable. The conductive oxide is formed of ITO or IZO to function as a better transparent conductive oxide. (Paragraph 0072) Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was formed to make the conductive oxide IZO to function as a better transparent conductive oxide as taught by Lee.

In re claim 4, Applicant's Prior Art discloses the metal film contains molybdenum. (Page 9, lines 9-10)

In re claim 5, Applicant's Prior Art discloses the protective film is formed at a side of contact hole with respect to metal film. (If the protective film is formed on the metal film then it would cover the metal film and would be on the side of the contact hole as in Fig. 16)

In re claim 6, APA discloses the metal film is formed at a side of contact hole with respect to protective film. (Fig. 16)

In re claim 7, APA disclose a thin film transistor including first electrode functioning as a drain electrode (126), a source electrode (124) and a gate electrode (122), wherein said second electrode (130) functions as a pixel electrode controlled by thin film transistor. (Page 6, line 39)

In re claim 8, APA discloses a gate signal line (112) being branched from gate electrode of thin film transistor, a gate insulation film (140) covering at least parts of

Art Unit: 2822

gate electrode, wherein the drain electrode of thin film transistor is formed on gate insulation film and protective film protects gate insulation film under the drain electrode from second etching.

In re claim 9, APA discloses a counter substrate (154) opposed to substrate and a liquid crystal (158) inserted between substrate and counter substrate.

In re claim 10, Applicant's Prior Art discloses a liquid crystal display (Figs. 14-16) that contains a method of substrate (139) comprising a process of forming a first electrode (126), a process for forming an insulation film (152) covering at a least a part of first electrode, a process for forming a contact hole (150) in said insulation film by removing a part of said insulation film, and a process for forming a second electrode (130) on said insulation film where said first electrode and said second electrode are electrically connected through said contact hole, wherein said process for forming the first electrode comprises. a process for laminating a metal film(126) and a protective film (Page 12, lines 6-7) where said protective film is an amorphous conductive oxide (ITO) and a process for patterning both of said laminated metal film and protective film by a first etching where an etching rate of said metal film is almost equal to an etching rate of said protective film, and said process for forming the contact hole comprises.

a process for forming said contact hole in said insulation film by a second etching where an etching rate of said protective film is almost zero. Applicant's Prior Art discloses all the limitations except for the protective film to contain indium oxide and zinc oxide.

Whereas Lee discloses a crystal display device that contains a conductive oxide made of ITO (indium tin oxide) that could also be made of IZO (indium zinc oxide). The ITO

Art Unit: 2822

and IZO are interchangeable. The conductive oxide is formed of ITO or IZO to function as a better transparent conductive oxide. (Paragraph 0072) Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was formed to make the conductive oxide IZO to function as a better transparent conductive oxide as taught by Lee.

In re claim 11, APA discloses the process of patterning comprises a process for patterning metal film and protective film by wet-etching using a mixed solution of weak acid. (Page 9, lines 14-17)

In re claim 12, APA discloses the first electrode functions as a drain electrode of a thin film transistor, second electrode functions as a pixel electrode controlled by thin film transistor, the method comprises a process for forming a gate signal line (112), a process for forming a gate electrode (122) of thin film transistor where gate electrode is branched from gate signal line, a process of forming a gate insulation film (140) covering at least a part of the gate signal line, a process of forming a source signal line (114), a process of forming a source electrode (124) of thin film transistor where source electrode is branched from source signal line and a process of removing a part of the gate insulation film on the gate signal line wherein second etching is dry-etching and a part of the gate insulation film is removed while forming contact hole by dry-etching. (Page 9, lines 25-26)

In re claim 15, APA discloses the metal film contains molybdenum. (Page 9, lines 9-10)

***Response to Arguments***

Applicant's arguments filed 9/26/07 have been fully considered but they are not persuasive. Applicant argues that the Lee reference does not disclose the drain electrode to be an IZO transparent material. Lee discloses a transparent conductive material that is either ITO or IZO, which are or can be art recognized equivalents to each other. In addition applicant argues that it was inadmissible hindsight to use IZO in place of ITO. Any judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." In re McLaughlin 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). Therefore the Lee reference can be combined with the Applicant's prior art and the transparent oxide made of IZO can be interchanged with ITO as an art recognized equivalent for a transparent electrode material. Therefore the rejection stands.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

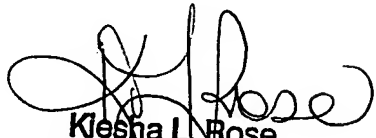
Art Unit: 2822

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 571-272-1844. The examiner can normally be reached on T-F 8:30-6:00 off Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Kiesha L. Rose  
Primary Examiner  
12/10/07